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Short-Term Mechanical Circulatory Support

The Problem of the Uninsured

We read with interest the recent report by Stretch et al. (1) regarding the increase in the use of short-term mechanical circulatory support (MCS) in the United States. The investigators demonstrated that the increased use of MCS has occurred together with improved in-hospital survival and decreased hospital costs. Both aspects will need to demonstrate favorable trends for MCS to continue to gain widespread acceptance for the treatment of cardiogenic shock. The financial implication of short-term MCS is the topic we would like to discuss further.

An important question is whether health insurance is a necessary prerequisite for MCS options. According to the investigators, 8.8% of MCS patients between 2004 and 2007 and 6.7% between 2008 and 2011 were characterized as having "self-pay, no charge, or other" as the primary payer. It is certainly likely that the majority of these patients were uninsured. Furthermore, <10% of patients had Medicaid as their primary insurance. There are no definitive data on whether insurance status, or lack thereof, is a determining factor in patients' receiving appropriate MCS therapy. Insurance status has been shown to contribute to whether patients receive appropriate medical therapy or percutaneous coronary intervention for coronary artery disease and ST-segment elevation myocardial infraction (2,3). Given the much greater expense for MCS, it stands to reason that financial implications do have some role in determining whether MCS is offered for patients in cardiogenic shock. Although the investigators reported that uninsured and Medicaid patients received MCS therapy, it is unknown whether the percent of patients in these categories is representative of the entire cardiogenic shock population. Are uninsured patients who require MCS being referred to and accepted at centers that can perform this therapy? The policy of individual MCS programs regarding the uninsured is unknown. A recent survey of heart transplantation programs revealed that 84% of programs required health insurance to actively list a patient for transplantation (4). Whether the same is true to consider short- or long-term MCS options is unknown, but possibly very similar.

The decision to initiate short-term MCS may be just one step in a pathway leading to long-term MCS and possibly heart transplantation. The investigators reported that 25% of patients who underwent short-term MCS for heart failure indications eventually underwent placement of permanent long-term devices. Once patients have been stabilized with short-term MCS devices, it can be difficult to withhold further treatment. Given the potential financial implications involved, it is not surprising that insurance considerations will factor in the decision-making process for hospitals to determine who is a candidate for short-term MCS. It remains to be seen if the Patient Protection and Affordable Care Act will change this dynamic by lowering the overall number of uninsured patients. However, uninsured patients in cardiogenic shock do not have time to wait for insurance to be obtained before definitive therapy is needed. We recently published data showing that at our institution, uninsured patients could undergo placement of permanent MCS devices with successful outcomes and subsequent attainment of health insurance (5). Several of our patients were on short-term MCS devices initially. Nonetheless, there is no easy solution to the problem of uninsured patients in cardiogenic shock. The ethics of withholding MCS to uninsured patients in cardiogenic shock must be vigorously debated in the United States, particularly as MCS becomes more widespread and outcomes continue to improve. A frank discussion of the financial implications both for patients and for the health care system needs to be undertaken.

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Administrative Data

Proceed With Caution

In a study recently published in the *Journal*, Dr. Stretch and colleagues (1) described increasing utilization of short-term mechanical circulatory support (MCS) in the United States. The investigators found a dramatic increase in the use of short-term MCS over the past decade. The NIS (Nationwide Inpatient Sample), used in this study, is an excellent resource to study temporal trends on a large scale and is easily available to researchers. The NIS, however, has limitations that affect the interpretation of this study. Hospitals are included to approximate a 20% sample of all hospitals in the United States (2). The weighting strategy used to create national estimates relies on the assumption that similar hospitals have similar experiences (3). This assumption is probably true for common diagnostic codes, such as pneumonia and urinary tract infection, but may not be true for rarer events, such as short-term MCS. In other words, all rural, large, government, nonteaching hospitals in the Northeast (1 of 60 hospital strata in the NIS) will not necessarily adopt MCS at similar rates. The national estimates, therefore, are prone to inaccuracy.

The cost methodology used in the NIS is on the basis of schemas based on primary International Classification of Diseases, Ninth Revision, or diagnostically related groups schemas developed by the Agency for Healthcare Research and Quality (4). The methodology does not directly account for length of stay and therefore does not account for outlier payments. MCS patients, however, may be more likely to have long, complicated hospitalizations and qualify for outlier payments. The investigators report "other" as the indication for hospitalization in 20% to 25% of encounters; the strategy used to calculate costs for this significant group of patients is unclear.

Anecdotal experience suggests that the findings of this investigation are true: MCS use is probably increasing. Still, investigators must ensure rigorous methods to avoid inaccurate trend assessment. Research using large datasets, such as the NIS, is important in understanding health care delivery trends on a broad scale. This type of research will become more prevalent and important as administrative data become more readily available. Therefore, an increased focus on methods is warranted.

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